ECS Southeast, LLP

Geotechnical Engineering Report

Buford Oil Change

Nelson Brogdon Boulevard
Buford, Georgia

ECS Project No. 10:11541

August 29, 2022

PRELIMINARY REPORT – FOR PLANNING AND DESIGN ONLY – NOT FOR CONSTRUCTION

August 29, 2022

Ms. Colleen Thelen
N3 Property Advisors, LLC
1240 N Kimball Ave
Southlake, Texas 76092

ECS Project No. 10:11541

Reference: Geotechnical Engineering Report
Buford Oil Change
Nelson Brogdon Boulevard
Buford, Gwinnett County, Georgia

Dear Ms. Thelen:

ECS Southeast, LLP (ECS) has completed the subsurface exploration, laboratory testing, and geotechnical engineering analyses for the above-referenced project. Our services were provided in accordance with the ECS Proposal Number 10:17588 dated July 31, 2022, as authorized by Ms. Colleen Thelen on July 31, 2022, on behalf of N3 Property Advisors, LLC. This report presents our understanding of the geotechnical aspects of the project along with the results of the field exploration and laboratory testing conducted, and our design and construction recommendations.

It has been our pleasure to be of service to N3 Property Advisors, LLC during the due diligence phase of this project. We would appreciate the opportunity to remain involved during the continuation of the design phase, and we would like to provide our services during construction phase operations as well to verify subsurface conditions assumed for this report. Should you have any questions concerning the information contained in this report, or if we can be of further assistance to you, please contact us.

Respectfully submitted,

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EXECUTIVE SUMMARY

At the time this report was prepared the project was in the due diligence and initial planning stages. As such, final site grading as well as the proposed building loads and foundation plans were not finalized. The analysis and recommendations provided in this report are preliminary in nature and intended for initial planning and design. They are not intended for final design and construction. Additional exploration and laboratory testing is recommended for the site retaining wall design prior to final design and further evaluation of the existing fill on site is recommended prior to construction.

This Executive Summary is intended as a very brief overview of the primary geotechnical conditions that are expected to affect design and construction. Information gleaned from this Executive Summary should not be utilized in lieu of reading the entire geotechnical report.

- Prior site grading activity has resulted in portions of the planned building area and site being filled with up to 28 plus feet of fill in some locations.
- Existing fills within the planned building footprint were noted as having traces topsoil and root materials at some boring locations. Some undercutting (removal) and replacement of poor-quality soils should be anticipated during building pad and site preparation.
- Provided that any soft or poor-quality existing fill are remediated, and subgrades are prepared, and new structural fill installed in accordance with the *Construction Recommendations* of this report; the new building may be supported on shallow spread footings utilizing a net allowable bearing pressure of 3000 psf.
- Recommendations provided in this report are preliminary in nature. When project drawings are finalized, they should be forwarded to ECS for review. At that time ECS can make the appropriate revisions to the report and provide additional recommendations, as needed, for final design and construction.
- Field observations, and quality assurance testing during earthwork and foundation installation are an extension of, and integral to, the geotechnical design. We recommend that ECS be retained to apply our expertise throughout the geotechnical phases of construction, and to provide consultation and recommendation should issues arise.

1.0 INTRODUCTION

1.1 GENERAL

The purpose of this study was to provide preliminary geotechnical information for the design of the proposed building foundations, floor slab, and parking lot and driveway areas. According to information provided to ECS, the proposed project consists of the construction of a one-story 3 bay oil change building with associated parking lot, driveways and site retaining wall.

The preliminary recommendations developed for this report are based on the results of our subsurface exploration and project information provided by N3 Property Advisors, LLC. For this report we were provided with:

- Preliminary Site Plan prepared by N3 Property Advisors, LLC dated June 13, 2022.
- ALTA/NSPS Land Title Survey prepared by Columbia Engineering dated June 10, 2022.

This report contains the results of our subsurface exploration and laboratory testing programs, site characterization, engineering analyses, and recommendations for the design and construction of the planned development.

1.2 SCOPE OF SERVICES

The purposes of this exploration were to explore the subsurface soil and groundwater conditions at the site and to develop engineering recommendations to guide design and construction of the proposed project. We accomplished the purposes of the study by:

1. Reviewing the available publications concerning local geology of the site and performing a general site reconnaissance.
2. Drilling borings to explore the subsurface soil and groundwater conditions.
3. Performing hand augers and Wildcat dynamic cone penetrometer (WDCP) tests to explore the subsurface soil and groundwater conditions in the wooded areas.
4. Performing laboratory tests on selected representative soil samples from the borings to evaluate pertinent engineering properties.
5. Evaluating the field and laboratory data to develop appropriate engineering recommendations.

2.0 PROJECT INFORMATION

2.1 PROJECT LOCATION AND SITE DESCRIPTION

The subject site is located on the north side of Nelson Brogdon Boulevard in Buford, Georgia. A Site Location Diagram (Figure 1) is provided in Appendix A. The subject site is 0.87-acres in area and is partially graded on the northern side, and a wooded area on the southeastern portion. A The Google™ Earth imagery below shows the general existing conditions of the site.

A fast food restaurant is adjacent to the subject property on the northwestern side. Two utilities, an 18-inch CMP storm line and an eight-inch DIP sanitary sewer line traverse through the northeastern side of the property.

The southeast corner of the site is wooded with low-lying vegetation. This area of the subject site is currently designed to receive stormwater. The stormwater "basin" receives off site stormwater from an 18-inch CMP at a discharge headwall (invert elevation 1097.90) located at the northwest corner of the basin and from a 24-inch RCP (headwall invert elevation 1102.47) at the southwestern corner of the basin from under Nelson Brogdon Boulevard. Water flows off site near the northeastern corner of the property at about elevation 1096. The existing site topography and site utilities are shown on the Test Location Diagram (Figure 2) in Appendix A of this report.

Fig 2.1.1 Current Site Condition (Google Earth imagery date September 29, 2020)

Existing site grades ranges from a high point of approximately elevation of about 1118 feet along the northwestern property line sloping downward to a low point of about 1092 along the southeastern property line. At the time of this study, the project was in its preliminary stages. As such, proposed grading

plans were not available. The referenced site grades are based on topographic information based on the ATLA/NSPS Land Title Survey by Columbia Engineering, dated, June 10, 2022.

2.2 PROPOSED CONSTRUCTION

The proposed construction consists of a one-story oil change facility approximately 1,700 square feet in area. The structure will have multiple bay doors and an office/lobby space. Site improvements include pavement, a dumpster pad, underground utilities, and site retaining walls. The proposed concept layout is shown on the Test Location Diagram (Figure 3) in Appendix A of this report.

At the time of this report, proposed site grading, structural loading, and final floor elevations were not provided. Based on the conceptual site plan provided by the client and site topography, we anticipate the final floor elevations will be near the existing grades in the northern portion of the with only minor cuts and fills required. However east of the building fills of about 16 feet maybe required to raise grades for the service bay access drives. Site retaining walls are planned for the grade change in the southeastern portion of the property.

Since structural loading was also unknown at time of this report, we have assumed a maximum column load of 10 kips and wall loads in the range of about 3 kips per linear foot for our evaluation. ECS should be notified if these assumptions are incorrect.

2.3 REGIONAL GEOLOGY

The site is in the Piedmont Region of Georgia. According to the Geology of the Greater Atlanta Region (1984), the site is in the Powers Ferry Formation with underlying bedrock consisting of gneiss, amphibolite, and mica schist. The natural soils at the site consist primarily of residual materials formed from the in-place physical and chemical weathering of the underlying parent bedrock. The relative density of the residual soils is primarily dependent upon the degree of weathering, surface disturbance, groundwater action, and residual mineral bonding.

The natural geology in portions of the site has been modified in the past by grading that included the placement of fill materials. The quality of man-placed fills can vary significantly, and it is often difficult to assess the engineering properties of existing fills. Furthermore, there is no specific correlation between N-values from Standard Penetration Tests performed in soil test borings and the degree of compaction of existing fill soils; however, a qualitative assessment of existing fills can sometimes be made based on the N-values obtained and observations of the materials sampled in the test borings.

Groundwater levels are irregular in the Piedmont Region. The surface of the groundwater table is largely dependent on the topography and is generally parallel to the ground surface. It can exhibit some distortions due to differences in vertical and horizontal permeability. The groundwater table can fluctuate several feet with seasonal rainfall.

3.0 FIELD EXPLORATION AND LABORATORY TESTING

To explore the subsurface conditions at the subject site, a total of six (6) soil test borings (B-1 through B-6) and three (3) hand augers and WDCP's were performed in the proposed development area. Our test locations were located by an ECS representative who used a handheld GPS unit. Their approximate test locations are shown on the Test Location Diagram (Figure 2) in Appendix A. *The surface elevations in our test logs have been interpreted from topographic information shown on the ATLA/NSPS Land Title Survey prepared by Columbia Engineering, dated, June 10, 2022. The test log elevations considered approximate and have not been field verified. As such, ECS does not certified the elevations as correct. Users of this data do so at their own risk.*

SPT Soil Borings: Borings B-1, B-2, and B-3 were performed within the proposed building footprint to depths of 30 feet, 35 feet, and 30 feet below existing grade, respectively. Borings B-4, B-5, and B-6 were performed in the proposed pavement areas to a depth of 10 feet below existing grade. The soil test borings were performed with an ATV mounted drill rig, which utilized hollow stem augers to advance the boreholes. No water or drilling fluid was introduced during the process. Representative soil samples were obtained by means of the split-barrel sampling procedure in general accordance with ASTM Specification D-1586 with a manual drive hammer. In this procedure, a 2-inch O.D., split-barrel sampler is driven into the soil 24 inches by a 140-pound hammer falling 30 inches.

The number of blows required to drive the sampler through a 12-inch interval is termed the Standard Penetration Test (SPT) N-value and is indicated for each sample on the boring logs. This value can be used as a qualitative indication of the in-place relative density of cohesionless soils. In a less reliable way, it also indicates the consistency of cohesive soils.

An ECS representative prepared a field log of the soils encountered in the borings. After recovery, each sample was removed from the sampler and visually classified by an ECS representative. Representative portions of each sample were then sealed and brought to our laboratory in Marietta, Georgia for further visual examination and laboratory testing by ECS.

Hand Augers: Hand auger borings HA-1, HA-2, and HA-3 were advanced to termination depths ranging from 5 to 6 feet in the wooded area near the proposed site retaining walls and the service bay access drive. Representative soil samples for hand auger borings were obtained by means of the hand operated auger sampling procedure in general accordance with ASTM Specification D-1452. In this procedure, the auger boring was made by hand rotating and advancing the auger bucket to the desired depths while periodically removing the bucket from the hole to clear and examine the auger cuttings.

WDCP Tests: The WDCP tests were performed adjacent to hand auger borings HA-1, HA-2, and HA-3. WDCP testing was conducted to provide relative bearing values at regular intervals throughout the soil profile. In WDCP testing, a cone with a diameter of 1.47 inches is driven into the soil by a 34.94-pound hammer falling 15 inches. The number of blows required to drive the cone through 10-centimeter intervals is recorded. The blows obtained from WDCP can be correlated to Standard Penetration Test (SPT) N-values. Soil samples are not collected during WDCP testing. The WDCP testing logs corresponding with Hand Auger Borings HA-1, HA-2, and HA-3 have been included with this report.

Limitations of Hand Auger and WDCP Equipment: For hand auger borings and WDCP testing, "equipment refusal" is a designation applied to any material which cannot be further penetrated by the hand auger or WDCP cone and is normally indicative of a dense material, such as rock fragments, dense soil, partially weathered rock, bedrock, or roots. Please note that the hand auger borings and WDCP testing utilize hand operated equipment. Mechanically operated equipment will likely penetrate past hand auger refusal and DCP refusal depths.

3.1 SUBSURFACE CHARACTERIZATION

3.1.1 Soil Conditions

Data from the soil test borings is included in Appendix B. The subsurface conditions discussed in the following paragraphs and those shown on the boring logs represent an estimate of the subsurface conditions based on interpretation of the boring data using normally accepted geotechnical engineering judgments. We note that the transition between different soil strata is usually less distinct than those shown on the boring logs.

Topsoil

While not detected at the test locations, surface topsoil of minor thickness (typically zero to 3 inches) and pine needles may be present in the wooded portion of the site. Tree root balls will extend significantly deeper and will require removal during site grubbing.

Fill Soils

Fill may be any material that has been transported and deposited by man. Undocumented fill is considered any man placed materials with no moisture-density records from the time it was originally placed. Materials described as fill were encountered in each of the borings extending to depths of more than 5 feet up to 28 feet below the existing grade. The composition of the fill material was variable typically consisting of silty Sand (SM) and sandy Silt (ML). Traces of roots or wood fragments were noted within some of the samples from the borings. Borings B-4, B-5, and B-6 and hand auger borings HA-1, HA-2, and HA-3 were terminated within the fill at final depths ranging from 5 feet to 10 feet below existing grades.

Residual Soils

Residual soils were encountered below the fill soils in borings B-1, B-2, and B-3. The residual soils were generally described as medium dense silty Sand (SM). Standard Penetration resistances (N-Values) ranged from 17 to 35 blows per foot (bpf).

Summary Table of Subsurface Conditions

Boring/ Hand Auger	Approx. Surface Elevation [(1)] (ft)	Depth of Fill Material (ft)	Termination Depth (ft)
B-1	1117	23	30
B-2	1116	26	35
B-3	1116.5	28	30
B-4	1118	> 10	10
B-5	1118	> 10	10
B-6	1117	> 10	10
HA-1	1105	> 6	6
HA-2	1103	> 5	6
HA-3	1101.5	>5	5

Note: (1) The surface elevations in our test logs have been interpreted from topographic information shown on the ATLA/NSPS Land Title Survey prepared by Columbia Engineering, dated, June 10, 2022.

3.1.2 Groundwater Observations

Groundwater seepage was not encountered at the time of drilling. The boreholes were immediately closed upon the completion of sampling due to safety concerns therefore stabilized groundwater readings were not obtained. Variations in the long-term water table may occur because of changes in precipitation, evaporation, surface water runoff, construction activities, and other factors

3.2 LABORATORY TESTING

Classification and index property tests were performed by ECS on representative soil samples obtained from the test borings to aid in classifying soils according to the Unified Soil Classification System and to quantify and correlate engineering properties. Laboratory testing included moisture content testing, Atterberg Limits, and washed #200 sieve gradation analyses. The results of the laboratory testing program are included in Appendix C.

Each sample was visually classified based on texture and plasticity in accordance with ASTM D2488 Standard Practice for Description and Identification of Soils (Visual-Manual Procedures) and including USCS classification symbols, and ASTM D2487 Standard Practice for Classification for Engineering Purposes (Unified Soil Classification System (USCS)). After classification, the samples were grouped in the major zones noted on the boring logs in Appendix B. The group symbols for each soil type are indicated in parentheses along with the soil descriptions. The stratification lines between strata on the logs are approximate; in situ, the transitions may be gradual.

4.0 DESIGN RECOMMENDATIONS

4.1 IMPACTS ON SITE DEVELOPMENT AND DESIGN

The proposed layout of the site development is shown on Figure 2 in Appendix A. The primary geotechnical related concerns identified during this study that may impact the project is the presence of existing fill.

Existing fill materials were encountered in each of the borings extending to depths ranging from more than 5 feet (HA-6) up to about 28 feet (B-3) below existing grade. In general, the fill appears to be relatively clean at the sample depths, with the exception of occasional roots, wood fragments, and rock fragments noted in some of the samples and auger cuttings.

Our experience indicates that controlled fills typically exhibit N-values of 10 or more. The N-values observed in the building borings, generally meet of exceeded that value. Therefore, it is our opinion, based on the N-values and the lack of organics and debris noted in the samples, the fill was likely placed in a semi-controlled manner and may be adequate for low-rise construction without significant remedial action. *We recommend a series of test pits be performed at the time of site preparation to further evaluate the existing fill conditions on site.*

As with any fill soil, there is always some risk that poor-quality materials and/or soft soil conditions may exist within the fill. If soft soils or pockets of debris, significant amounts of organics exist within the fill and are not removed during construction, then there is the risk that localized excessive differential settlements could occur in response to new structural loads and the on-going process of volume change which may still occur in the fill. If such non-uniform settlements occur, then moderate distress could result.

With the presumption that some poor-quality material may be present in the fill, we recommend a grading allowance for poor-quality be set aside as a contingency and that N3 Property Advisors, LLC anticipate some localized undercutting of poor-quality or soft materials may be necessary during site grading and/or during foundation construction. The actual extent and nature of the required remedial measures can be determined by ECS from the supplemental test pits and proofrolling at the time of construction.

4.2 FOUNDATIONS

Provided subgrades and structural fills are prepared as recommended in this report and the poor-quality materials removal, the proposed structure can be supported by shallow foundations including column footings and continuous wall footings. We recommend the foundation design use the parameters provided in the table below.

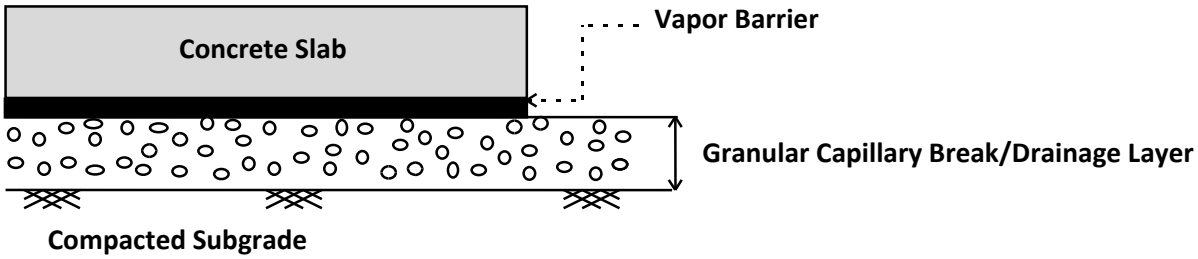
Potential Undercuts: If poor-quality soils are observed at the footing bearing elevations, the poor-quality soils should be undercut and removed. Any undercut should be backfilled with compacted aggregate fill. up to the design bottom of footing elevation. Alternatively, the over-excavation could be backfilled with lean concrete (or flowable fill) up to the design bottom of footing elevation. The footing may be constructed on top of the aggregate fill or hardened lean concrete (or flowable fill).

Design Parameter	Recommendation
Net Allowable Bearing Pressure [1]	3,000
Acceptable Bearing Soil Material	New structural fill and engineer approved existing fill
Minimum Width Column Footing Wall Footing	 36 inches 18 inches
Minimum Footing Embedment Depth (Below slab or outside finished grade) [2]	18 inches
Estimated Total Settlement [3]	Less than 1 inch
Estimated Differential Settlement [4]	Less than ½-inch

Notes:
(1) Net allowable bearing pressure is the applied pressure more than the surrounding overburden soils above the base of the foundation.
(2) For bearing considerations and frost penetration requirements.
(3) Based on assumed structural loads. If final loads are different, ECS must be contacted to update foundation recommendations and settlement calculations.
(4) Based on maximum column/wall loads and variability in borings. Differential settlement can be re-evaluated once the foundation plans are more complete.

4.3 SLABS ON GRADE

Based on the assumed finished floor elevation, it appears that the upper slab will bear on new structural fill, and engineer-approved existing fill. The on-site existing undocumented fill and new structural fill are considered capable of supporting the floor slabs. Within the building footprint there may be areas of soft or yielding existing fill that should be removed and replaced with compacted structural fill in accordance with the recommendations included in this report. The following graphic depicts our soil-supported slab recommendations:



1. Drainage Layer Thickness: 4 inches
2. Drainage Layer Material: granular material such as GAB having a maximum aggregate size of 1.5 inches and no more than 10 percent fines.
3. Subgrade compacted to *98 percent* maximum dry density per ASTM D698

Subgrade Modulus: Provided the structural fill and granular drainage layer are constructed in accordance with our recommendations, the slab may be designed assuming a modulus of subgrade reaction, k_1 of 125 pci (lbs./cu. inch).

Vapor Barrier: Before the placement of concrete, a vapor barrier may be placed on top of the granular drainage layer to provide additional protection against moisture vapor penetration through the floor slab. When a vapor barrier is used, special attention should be given to surface curing of the slab to reduce the potential for uneven drying, curling and/or cracking of the slab. Depending on proposed flooring material types, the structural engineer and/or the architect may choose to eliminate the vapor barrier.

Slab Isolation: Soil-supported slabs should be isolated from the foundations and foundation-supported elements of the structure so that differential movement between the foundations and slab will not induce excessive shear and bending stresses in the floor slab. Where the structural configuration prevents the use of a free-floating slab such as in a drop-down footing/monolithic slab configuration, the slab should be designed with adequate reinforcement and load transfer devices to reduce overstressing of the slab.

The above should be considered general guidance to assist N3 Property Advisors, LLC, and the design team. Project specific designs, plan details or other input from the Structural Engineer of Record should control.

4.5 SEISMIC DESIGN CONSIDERATIONS

Seismic Site Classification: The International Building Code (IBC) requires site classification for seismic design based on the upper 100 feet of a soil profile. The N-value method was used in classifying this site. Based on actual and/or estimated average N-values in the upper 100 feet of the soil profile, we estimated an N_{bar} value that corresponds to a Site Class D.

Ground Motion Parameters: In addition to the seismic site classification noted above, ECS has determined the design spectral response acceleration parameters using ASCE 7-16 as the reference design code document. The Mapped Reponses were determined from the free SEAOC/OSHPD Seismic Design Maps tool available from the website (https://seismicmaps.org) and the project site coordinates. *The design responses for the short (0.2 sec, S_{DS}) and 1-second period (S_{D1}) are **0.215 g** and **0.141 g**, respectively.* The recommended ground motion parameters are provided in the table below.

GROUND MOTION PARAMETERS [ASCE 7-16 Method]								
Period (sec)	**Mapped Spectral Response Accelerations (g)**		**Values of Site Coefficient for Site Class**		**Maximum Spectral Response Acceleration Adjusted for Site Class (g)**		**Design Spectral Response Acceleration (g)**	
Reference	Figures 1613.3.1 (1) & (2)		Tables 1613.3.3 (1) & (2)		Eqs. 16-37 & 16-38		Eqs. 16-39 & 16-40	
0.2	S_S	0.202	F_a	1.6	$S_{MS}=F_aS_s$	0.323	$S_{DS}=2/3\ S_{MS}$	**0.215**
1.0	S_1	0.088	F_v	2.4	$S_{M1}=F_vS_1$	0.211	$S_{D1}=2/3\ S_{M1}$	**0.141**

The Seismic Site Class definition should not be confused with the Seismic Design Category designation which the Structural Engineer typically assesses.

4.6 PAVEMENTS

No traffic data was available; therefore, the provided preliminary pavement sections are based on anticipated traffic conditions for a similar type of facility. California Bearing Ratio [CBR] testing was not performed as part of this study. For preliminary design purposes, we estimated a design CBR value of 4 based upon our visual classification of likely pavement subgrade soils. Prior to subbase placement and paving, CBR testing on the subgrade soils should be performed to confirm the soil engineering properties. The pavement sections below are guidelines and can be adjusted with more complete traffic data and actual CBR lab testing.

PROPOSED PAVEMENT SECTIONS		
MATERIAL	FLEXIBLE PAVEMENT	RIGID PAVEMENT
	Parking Areas and Drive Lanes	Parking Areas and Drive Lanes
Portland Cement Concrete (f'_c = 4000 psi) (A)	-	6 in.
AC Surface Course HMA Superpave – 9.5 mm	1.5 in.	-
AC Base Course HMA Superpave – 25 mm	2.5 in.	-
Graded Aggregate Base Course (GAB)	8 in.	6 in.

Note: (A) macro-fiber mesh reinforcement could be considered for the concrete.

Large, front loading garbage trucks which empty trash dumpsters frequently impose concentrated front wheel loads on pavements during loading. This type of loading typically results in rutting of asphalt pavement and ultimately pavement failures. For preliminary design purposes, we recommend that the pavement in trash pickup areas consist of a 6-inch thick, 4,000 psi, reinforced concrete slab over 6-inches of dense graded aggregate.

Appropriate steel doweling and jointing should be incorporated into the design of all concrete pavements. Jointing details for concrete pavements should be consistent with ACI (*ACI 330R-08: Guide for the Design and Construction of Concrete Parking Lots*) and PCA guidelines.

When traffic loading becomes available ECS, or the Civil Engineer can design the pavements. Prior to subbase placement and paving, CBR testing of the subgrade soils (both natural and fill soils) should be performed to determine the soil engineering properties for final pavement design.

4.7 SITE RETAINING WALLS

Site retaining wall design recommendations were beyond the scope of this exploration. Supplemental exploration and laboratory testing should be performed to provide the wall designer with appropriate design recommendations. Once the site grading plans are further developed, we recommend the plans be reviewed by ECS to make recommendations on a supplemental exploration and laboratory testing program.

5.0 SITE CONSTRUCTION RECOMMENDATIONS

5.1 SUBGRADE PREPARATION

5.1.1 Stripping and Grubbing

The subgrade preparation should consist of stripping all vegetation, rootmat, and any soft or poor-quality materials from the 10-foot expanded building and 5-foot expanded pavement limits, and 5 feet beyond the toe of structural fills. Deeper organic laden soils may be present in wet, low-lying, poorly drained areas and in the vicinity of hand auger HA-3. In wooded areas around hand auger borings HA-2 and HA-3, the root balls may extend as deep as about 2 feet and will require additional localized stripping depth to completely remove the organics. ECS should be retained to verify that topsoil and poor-quality surficial materials have been removed prior to the placement of structural fill or construction of structures.

5.1.2 Removal of Structures and Utilities

Existing utilities that will no longer be in service should be completely removed from the new building footprint. Active utilities should be re-routed around the building, wherever possible, and the abandoned section of utility completely removed from the proposed building area. If active utilities are to remain within the building footprint, these utilities should be reviewed by the project structural engineer for conflicts and clearly identified on the construction plans. Special foundation construction procedures may be required to support the new building foundations over utilities.

Excavations resulting from the removal of the above items and associated loose fill should be backfilled with new structural fill as discussed in the following section of this report. This should be observed on a full-time basis by a representative of ECS to document that the poor-quality materials have been removed and that the subgrade is suitable for support of the proposed construction and/or fills.

Any below ground construction/utilities in the vicinity of the proposed building should be removed prior to the initiation of new construction. We suggest that available information regarding the existing utilities at the site be reviewed prior to construction.

5.1.3 Proofrolling

Prior to new fill placement or construction on subgrades, the subgrades should be evaluated by ECS. The exposed subgrade should be thoroughly proofrolled with construction equipment having a minimum axle load of 10 tons [e.g., fully loaded tandem-axle dump truck]. Proofrolling should be traversed in two perpendicular directions with overlapping passes of the vehicle under the observation of ECS. This procedure is intended to assist in identifying any localized yielding materials.

Where proofrolling identifies areas that are yielding or “pumping” subgrade those areas should be repaired prior to the placement of any subsequent structural fill or other construction materials. Methods of stabilization include undercutting, moisture conditioning, or chemical stabilization. The situation should be discussed with ECS to determine the appropriate procedure. Test pits may be excavated to explore the shallow subsurface materials to help in determining the cause of the observed yielding materials, and to assist in the evaluation of appropriate remedial actions to create a firm and unyielding subgrade.

5.1.4 Site Temporary Dewatering

While groundwater seepage was not encountered within the limited explorations performed, water and wet subgrades may be present in the lower portion of the site. Particularly with the discharge of stormwater into the area.

The contractor shall make their own assessment of temporary dewatering needs based upon the limited subsurface groundwater information presented in this report. Soil sampling is not continuous, and thus soil and groundwater conditions may vary between sampling intervals (typically 5 feet). If the contractor believes additional subsurface information is needed to assess dewatering needs, they should obtain such information at their own expense. ECS makes no warranties or guarantees regarding the adequacy of the provided information to determine dewatering requirements; such recommendations are beyond our scope of services.

Dewatering systems are a critical component of many construction projects. Dewatering systems must be selected, designed, and maintained by a qualified and experienced (specialty or other) contractor familiar with the geotechnical and other aspects of the project. The failure to properly design and maintain a dewatering system for a given project can result in delayed construction, unnecessary foundation subgrade undercuts, detrimental phenomena such as 'running sand' conditions, internal erosion (i.e., 'piping'), the migration of 'fines' down-gradient towards the dewatering system, localized settlement of nearby infrastructure, foundations, slabs-on-grade, and pavements. Water discharged from any site dewatering system shall be discharged in accordance with all local, state, and federal requirements.

5.2 EARTHWORK OPERATIONS

5.2.1 Usability of On-Site Soils for Reuse as Structural Fill

Undocumented fill type encountered in the borings performed for this project consisted of silty Sand (SM) and sandy Silt (ML). Residual soil types encountered in the borings performed for this project consisted of silty Sand (SM).

Laboratory testing on the selected soils from Borings B-1, B-2, B-6, and HA-2 at depths from ground surface to 3.5 feet indicate that the natural moisture content of the tested soils ranged between 15.4 and 21.0 percent. Laboratory testing indicates that the moisture content of the tested soil samples is likely near optimum or slightly above optimum for proper compaction. The site soils contain moderate percentages of fine-grained soils, about 52 to 57 percent in the samples tested. These types of soils are moisture sensitive and may be difficult to use as structural fill if the material becomes too wet. The fine-grained soils at the site could become unworkable and require blending with sandier soils and/or drying for proper compaction.

Atterberg Limits testing was performed on soil samples obtained from Borings B-1 and B-2. The testing indicated that the tested soil samples had liquid limits (LL) of 43 and 49 percent, and a plasticity index (PI) of 13 and 21 percent, respectively. The liquid limit of the tested sample is above the recommended liquid limit of less than 40 for structural fill. The plasticity index of the tested sample from Boring B-1 is below the recommended plasticity index of less than 20 percent for structural fill. The plasticity index of the tested sample from Boring B-2 is slightly above the recommended plasticity index of less than 20 percent for structural fill. Based on the lab test results, the soil sample from Boring B-1 and B-2 is classified as sandy Silt (ML). The sandy Silt (ML) soils appear generally good quality for re-use as structural fill if they are within

the moisture range for proper compaction and are free from deleterious materials, such as organics and debris. The on-site soils should be tested by ECS prior to use as structural fill.

Fill Material Submittals: Prior to placement of structural fill, representative bulk samples (about 50 pounds) of on-site and/or off-site borrow should be submitted to ECS for laboratory testing, which will typically include Atterberg limits, natural moisture content, grain-size distribution, and moisture-density relationships (i.e., Proctors) for compaction. Import materials should be tested prior to being hauled to the site to determine if they meet project specifications. Alternatively, Proctor and gradation data from other accredited laboratories can be submitted if the test results are within the last 90 days.

Structural Fill Materials: Materials for use as structural fill should consist of inorganic soils with the following engineering properties and compaction requirements.

STRUCTURAL FILL INDEX PROPERTIES	
Subject	**Property**
Building and Pavement Areas	LL < 40, PI < 20
Max. Particle Size	4 inches
Fines Content	Less than 65 %
Minimum dry unit weight (in place)	$\geq$ 95 pcf
Max. organic content	5% by dry weight

STRUCTURAL FILL COMPACTION REQUIREMENTS	
Subject	**Requirement**
Compaction Standard	Standard Proctor, ASTM D698
Required Compaction	95% of Max. Dry Density (98% in the top 1 foot)
Moisture Content	$\pm$3 % points of the soil's optimum value
Loose Thickness	8 inches prior to compaction

Fill Placement Considerations: Fill materials should not be placed on excessively wet soils. Excessively wet soils or aggregates should be scarified, aerated, and moisture conditioned.

Subgrade Benching: In fill areas, new soil embankments should be constructed from the bottom up. End dumping from the top of the slope should not be permitted. Fill should not be placed on ground with a slope steeper than 5H:1V. Where steeper slopes exist, the ground should be benched to allow for fill placement on a horizontal surface. Each fill layer should be benched into the existing slope for stability.

5.3 FOUNDATION AND SLAB OBSERVATIONS

Protection of Foundation Excavations: Exposure to the environment may weaken the soils at the footing bearing level if the foundation excavations remain open for too long a time. Therefore, foundation concrete should be placed the same day that excavations are made. If the bearing soils are softened by surface water intrusion or exposure, the softened soils must be removed from the foundation excavation bottom immediately prior to placement of concrete. If the excavation must remain open overnight, or if rainfall

becomes imminent while the bearing soils are exposed, a 1 to 3-inch thick "mud mat" of "lean" concrete could be placed on the bearing soils before the placement of reinforcing steel.

Footing Subgrade Observations: Provided that the building is prepared as outlined in this report we anticipate that most of the soils at the foundation bearing elevation are anticipated to be suitable for support of the proposed structure. It is important to have the Geotechnical Engineer of Record (ECS), or their authorized representative, observe the foundation subgrade prior to placing foundation concrete, to confirm the bearing soils are what was anticipated.

Slab Subgrade Verification: Prior to placement of a drainage layer, the subgrade should be prepared in accordance with the recommendations found in Section 5.1.3 *Proofrolling.*

5.4 UTILITY INSTALLATIONS

Utility Subgrades: The soils encountered in our explorations are expected to be generally suitable for support of utility pipes. The pipe subgrades should be observed and probed for stability by ECS. Any loose or unsuitable materials encountered should be removed and replaced with suitable compacted Structural Fill, or pipe stone bedding material.

Utility Backfilling: The granular bedding material should be at least 4 inches thick, but not less than that specified by the civil engineer's project drawings and specifications. We recommend that the bedding materials be placed up to the springline of the pipe. Fill placed for support of the utilities, as well as backfill over the utilities, should satisfy the requirements for structural fill and fill placement.

Excavation Safety: All excavations and slopes should be constructed and maintained in accordance with OSHA excavation safety standards. The contractor is solely responsible for designing, constructing, and maintaining stable temporary excavations and slopes. The contractor's responsible person, as defined in 29 CFR Part 1926, should evaluate the soil exposed in the excavations as part of the contractor's safety procedures. In no case should slope height, slope inclination, or excavation depth, including utility trench excavation depth, exceed those specified in local, state, and federal safety regulations. ECS is providing this information solely as a service to our client. ECS is not assuming responsibility for construction site safety or the contractor's activities; such responsibility is not being implied and should not be inferred.

5.5 ADDITIONAL CONSIDERATIONS

During the cooler and wetter periods of the year, delays and additional earthwork costs should be anticipated. At these times, reduction of soil moisture may need to be accomplished by a combination of mechanical manipulation and the use of chemical additives, such as lime or cement, to lower moisture contents to levels appropriate for compaction. Alternatively, during the drier times of the year, such as the summer months, moisture may need to be added to the soil to provide adequate moisture for successful compaction according to the project requirements.

Measures should also be taken to limit site disturbance, especially from rubber-tired heavy construction equipment, and to control and remove surface water from development areas, including structural and pavement areas.

Exposure to the environment may weaken the soils at the footing bearing level if the foundation excavations remain open for too long a time. Therefore, foundation concrete should be placed the same day that excavations are dug. If surface water intrusion or exposure softens the bearing soils, the softened soils must be removed from the foundation excavation bottom immediately prior to placement of concrete. If the excavation must remain open overnight, or if rainfall becomes imminent while the bearing soils are exposed, we recommend that the foundations be covered or otherwise protected.

Positive site drainage should be maintained during earthwork operations, which should help maintain the integrity of the soil. Placement of fill on the near surface soils, which have become saturated, could be difficult. When wet, these soils will degrade quickly with disturbance from contractor operations and will be extremely difficult to stabilize for fill placement.

Where unacceptable materials are encountered, they must be evaluated and may need to be undercut and replaced or improved by re-compaction.

The surface of the site should be kept properly graded to enhance drainage of the surface water away from the proposed structure areas during the construction phase. We recommend that an attempt be made to enhance the natural drainage without interrupting its pattern.

The surficial soils contain fines, which are considered moderately erodible. Erosion and sedimentation shall be controlled in accordance with Best Management Practices and current County and State NPDES requirements. At the appropriate time, we would be pleased to provide a proposal for conducting construction materials testing and NPDES services.

6.0 ADDITIONAL EXPLORATION AND PLAN REVIEW

Subsurface conditions that could adversely affect the site development and construction costs include existing fills soils varying up to approximately 28 feet in the test borings. Deeper fills may be present in unexplored portions of the site. While the existing fill appears capable of supporting the proposed building, we recommend supplemental test pits be performed to further evaluate the quality of the existing fill materials for structural support.

As mentioned previously, site retaining wall design recommendations were beyond the scope of this exploration. Supplemental exploration and laboratory testing should be performed to provide the wall designer with appropriate design recommendations. Once the site grading plans are further developed, we recommend the plans be reviewed by ECS to make recommendations on a supplemental exploration and laboratory testing program. We recommend additional borings along the proposed retain wall alignments to further evaluate the quality of the existing fill materials for structural support. We recommend the additional borings be performed prior to construction or during the initial stages of construction after the wooded area has been cleared and a more developed plan of the retain wall has been issued.

The site development plans are preliminary since grading information was not available at the time of this study. We recommend that ECS review the final project plans and specifications so we can confirm that those plans/specifications are in accordance with the recommendations of this geotechnical report.

7.0 CLOSING

ECS has prepared this report to guide the geotechnical-related design and construction aspects of the project. We performed these services in accordance with the standard of care expected of professionals in the industry performing similar services on projects of like size and complexity at this time in the region. No other representation expressed or implied, and no warranty or guarantee is included or intended in this report. ECS is not responsible for the conclusions, opinions, or recommendations of others based on the data in this report.

The description of the proposed project is based on information provided to ECS by N3 Property Advisors, LLC If any of this information is inaccurate or changes, either because of our interpretation of the documents provided or site or design changes that may occur later, ECS should be contacted so we can review our recommendations and provide additional or alternate recommendations that reflect the proposed construction.

Because undocumented fill is present on this site, N3 Property Advisors, LLC must assess the relative risk that unacceptable material could have been buried in the proposed development area which was not detected in the widely spaced borings.

Field observations, monitoring, and quality assurance testing during earthwork and foundation installation are an extension of and integral to the geotechnical design recommendation. We recommend that the owner retain these quality assurance services and that ECS be allowed to continue our involvement throughout these critical phases of construction to provide general consultation as issues arise. We would be pleased to provide an estimated cost for these services at the appropriate time. Please contact Mr. Wes Jacques by email (WJacques@ecslimited.com) or at our office number (770-590-1971).

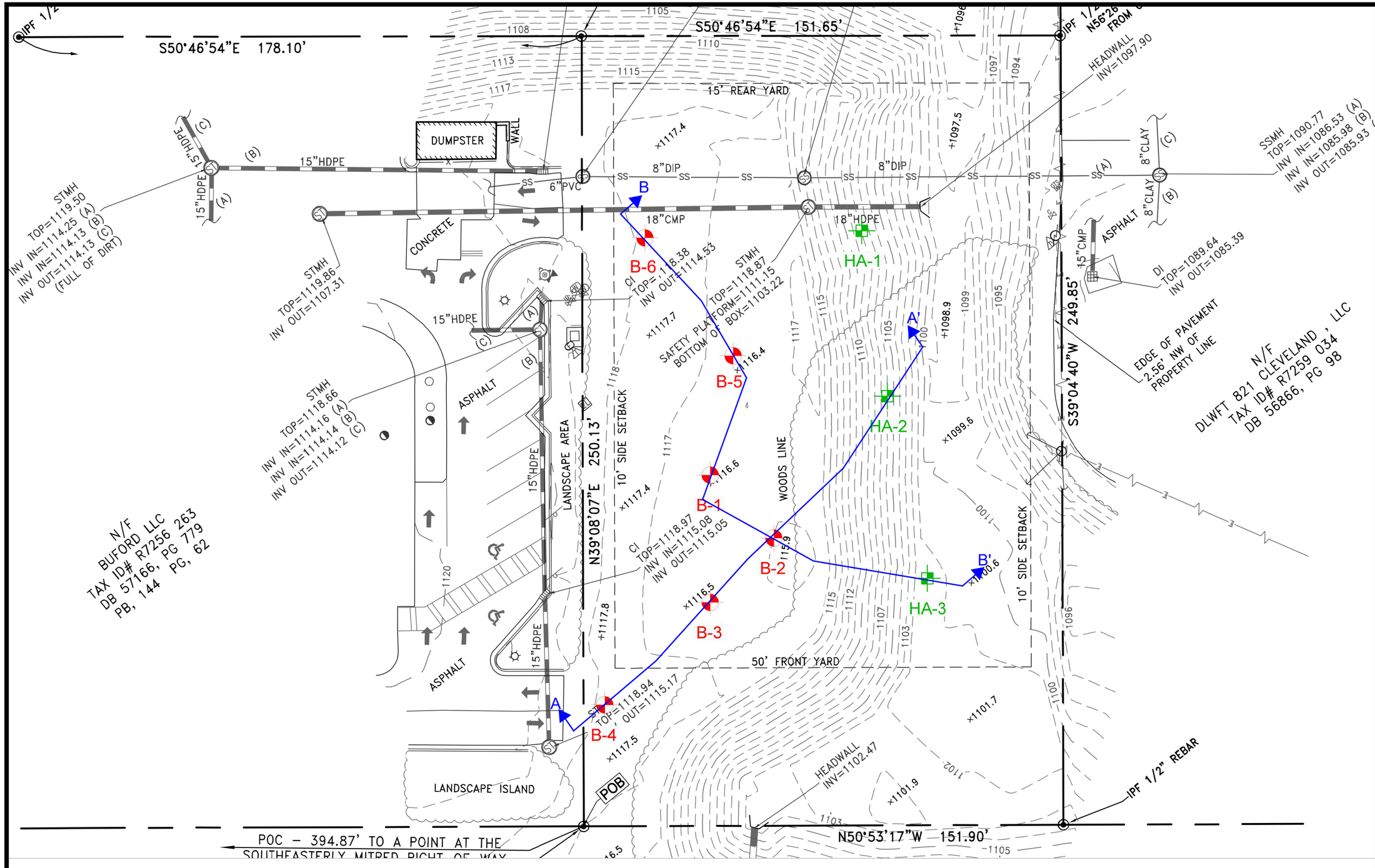
This report is provided for the exclusive use of N3 Property Advisors, LLC, and their project specific design team. This report is not intended to be used or relied upon in connection with other projects or by other third parties. ECS disclaims liability for any such third-party use or reliance without express written permission.

APPENDIX A – Diagrams

Figure 1 - Site Location Diagram
Figures 2 and 3 - Test Location Diagrams

SITE LOCATION DIAGRAM
BUFORD OIL CHANGE
NELSON BROGDON BLVD AND BUFORD HWY NE, BUFORD, GEORGIA
N3 PROPERTY ADVISORS, LLC

ENGINEER	RHB
SCALE	AS NOTED
PROJECT NO.	10:11541
FIGURE	1
DATE	8/3/2022



LEGEND

- Approximate Boring Location
- B-# Boring Designation
- Approximate Hand Auger/WDCP Location
- HA-# Hand Auger/WDCP Designation
- X — X' Cross Section

Graphic Scale 1"=30'

30 20 10 0 10 20 30

ECS

PROJECT: Buford Oil Change, Buford, GA

PREPARED FOR: N3 Property Advisors, LLC

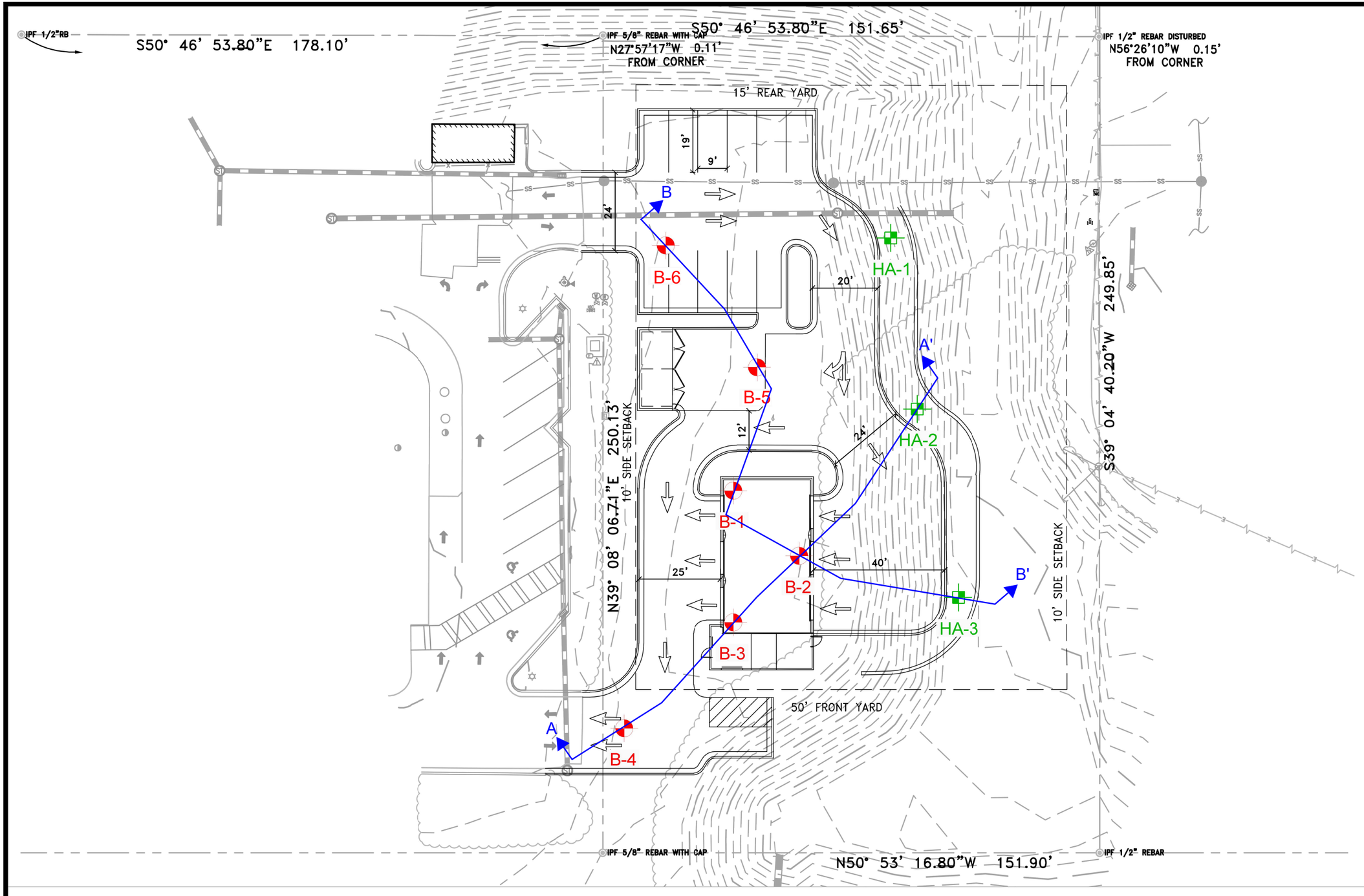
FIGURE NAME: TEST LOCATION DIAGRAM

REFERENCE: ALTA / NSPS Land Title Survey, Columbia Engineering, 06/10/2022

REVISIONS	

JOB NO.	10:11541	
SCALE	1"=30'	
DRAWN	DTS	8/3/22
APPR.	TKS	8/3/22

Figure No.: 2



LEGEND

- Approximate Boring Location
- B-# Boring Designation
- Approximate Hand Auger/WDCP Location
- HA-# Hand Auger/WDCP Designation
- X X' Cross Section

Graphic Scale 1"=30'

30 20 10 0 10 20 30

ECS

PROJECT: Buford Oil Change, Buford, GA

PREPARED FOR: N3 Property Advisors, LLC

FIGURE NAME: TEST LOCATION DIAGRAM

REFERENCE: 5741.00 Buford Oil Change KMB 06/13/2022

REVISIONS

JOB NO.	10:11541
SCALE	1"=30'
DRAWN	DTS 8/3/22
APPR.	TKS 8/3/22

Figure No.: 3

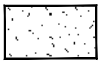
APPENDIX B – Field Explorations

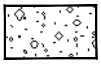
Reference Notes for Boring Logs
Subsurface Cross-Section (A-A' and B-B')
Boring Logs (B-1 through B-6)
Hand Auger Boring Logs (HA-1, HA-2, and HA-3)
WDCP Test Logs (HA-1, HA-2, and HA-3)

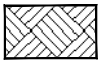
REFERENCE NOTES FOR BORING LOGS

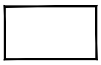
MATERIAL[1,2]

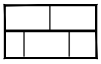

ASPHALT


CONCRETE


GRAVEL

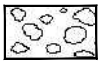

TOPSOIL

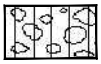

VOID


BRICK

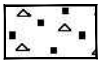

AGGREGATE BASE COURSE

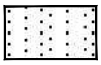

GW **WELL-GRADED GRAVEL**
gravel-sand mixtures, little or no fines

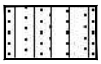

GP **POORLY-GRADED GRAVEL**
gravel-sand mixtures, little or no fines


GM **SILTY GRAVEL**
gravel-sand-silt mixtures

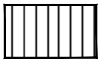

GC **CLAYEY GRAVEL**
gravel-sand-clay mixtures

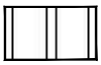

SW **WELL-GRADED SAND**
gravelly sand, little or no fines

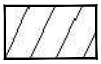

SP **POORLY-GRADED SAND**
gravelly sand, little or no fines


SM **SILTY SAND**
sand-silt mixtures

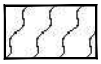

SC **CLAYEY SAND**
sand-clay mixtures

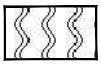

ML **SILT**
non-plastic to medium plasticity

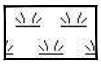

MH **ELASTIC SILT**
high plasticity


CL **LEAN CLAY**
low to medium plasticity


CH **FAT CLAY**
high plasticity


OL **ORGANIC SILT or CLAY**
non-plastic to low plasticity


OH **ORGANIC SILT or CLAY**
high plasticity


PT **PEAT**
highly organic soils

DRILLING SAMPLING SYMBOLS & ABBREVIATIONS

SS	Split Spoon Sampler	PM	Pressuremeter Test
ST	Shelby Tube Sampler	RD	Rock Bit Drilling
WS	Wash Sample	RC	Rock Core, NX, BX, AX
BS	Bulk Sample of Cuttings	REC	Rock Sample Recovery %
PA	Power Auger (no sample)	RQD	Rock Quality Designation %
HSA	Hollow Stem Auger		

PARTICLE SIZE IDENTIFICATION

DESIGNATION		PARTICLE SIZES
Boulders		12 inches (300 mm) or larger
Cobbles		3 inches to 12 inches (75 mm to 300 mm)
Gravel:	Coarse	¾ inch to 3 inches (19 mm to 75 mm)
	Fine	4.75 mm to 19 mm (No. 4 sieve to ¾ inch)
Sand:	Coarse	2.00 mm to 4.75 mm (No. 10 to No. 4 sieve)
	Medium	0.425 mm to 2.00 mm (No. 40 to No. 10 sieve)
	Fine	0.074 mm to 0.425 mm (No. 200 to No. 40 sieve)
Silt & Clay ("Fines")		<0.074 mm (smaller than a No. 200 sieve)

COHESIVE SILTS & CLAYS

UNCONFINED COMPRESSIVE STRENGTH, Q_P[4]	SPT[5] (BPF)	CONSISTENCY[7] (COHESIVE)
<0.25	<2	Very Soft
0.25 - <0.50	2 - 4	Soft
0.50 - <1.00	5 - 8	Firm
1.00 - <2.00	9 - 15	Stiff
2.00 - <4.00	16 - 30	Very Stiff
4.00 - 8.00	31 - 50	Hard
>8.00	>50	Very Hard

GRAVELS, SANDS & NON-COHESIVE SILTS

SPT[5]	DENSITY
<5	Very Loose
5 - 10	Loose
11 - 30	Medium Dense
31 - 50	Dense
>50	Very Dense

RELATIVE AMOUNT[7]	COARSE GRAINED (%)[8]	FINE GRAINED (%)[8]
Trace	≤5	≤5
With	10 - 20	10 - 25
Adjective *(ex: "Silty")*	25 - 45	30 - 45

WATER LEVELS[6]

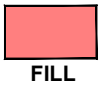

WL (First Encountered)


WL (Completion)


WL (Seasonal High Water)


WL (Stabilized)

FILL AND ROCK


FILL


POSSIBLE FILL


PROBABLE FILL


ROCK

[1]Classifications and symbols per ASTM D 2488-17 (Visual-Manual Procedure) unless noted otherwise.

[2]To be consistent with general practice, "POORLY GRADED" has been removed from GP, GP-GM, GP-GC, SP, SP-SM, SP-SC soil types on the boring logs.

[3]Non-ASTM designations are included in soil descriptions and symbols along with ASTM symbol [Ex: (SM-FILL)].

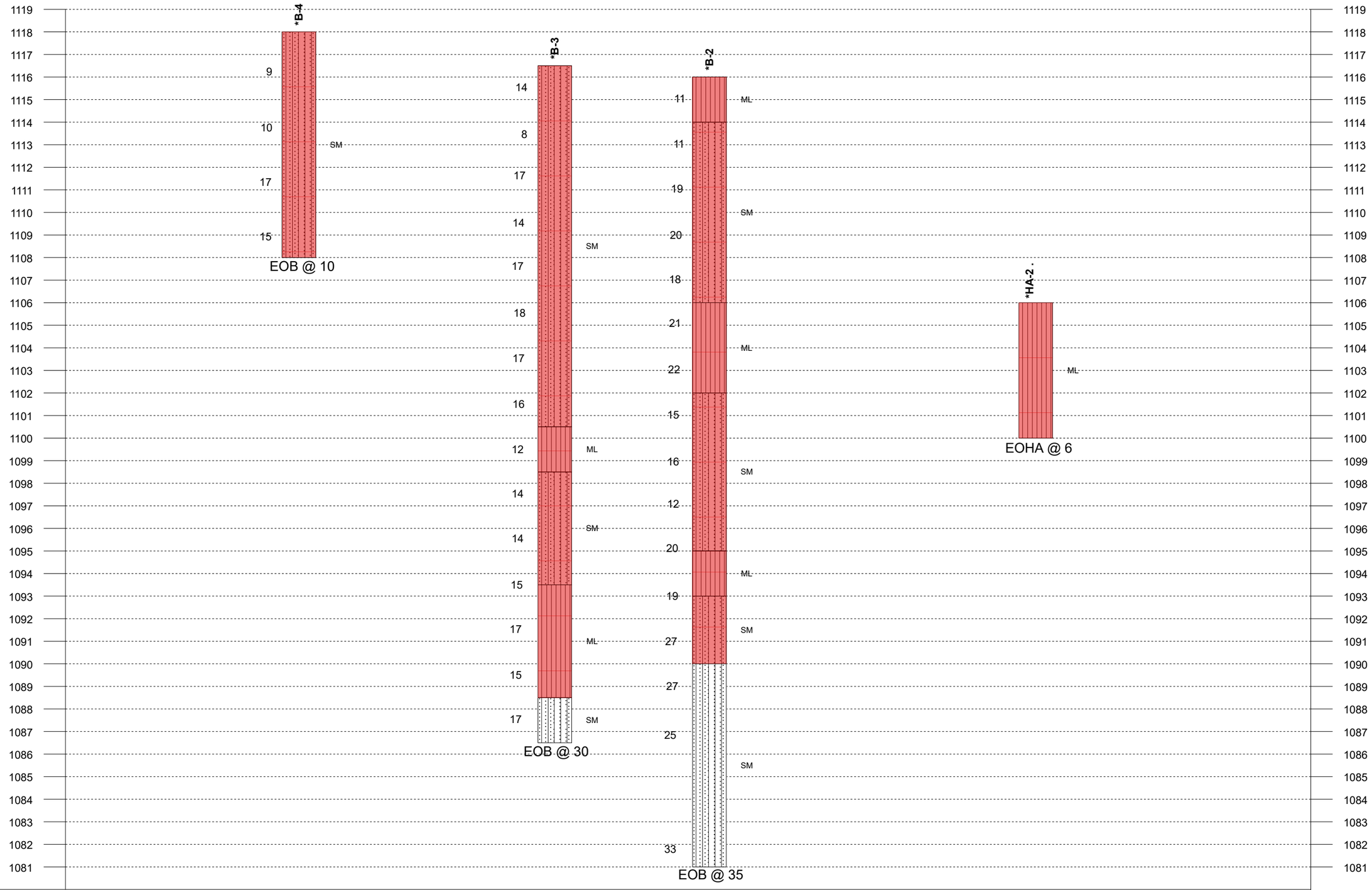
[4]Typically estimated via pocket penetrometer or Torvane shear test and expressed in tons per square foot (tsf).

[5]Standard Penetration Test (SPT) refers to the number of hammer blows (blow count) of a 140 lb. hammer falling 30 inches on a 2 inch OD split spoon sampler required to drive the sampler 12 inches (ASTM D 1586). "N-value" is another term for "blow count" and is expressed in blows per foot (bpf). SPT correlations per 7.4.2 Method B and need to be corrected if using an auto hammer.

[6]The water levels are those levels actually measured in the borehole at the times indicated by the symbol. The measurements are relatively reliable when augering, without adding fluids, in granular soils. In clay and cohesive silts, the determination of water levels may require several days for the water level to stabilize. In such cases, additional methods of measurement are generally employed.

[7]Minor deviation from ASTM D 2488-17 Note 14.

[8]Percentages are estimated to the nearest 5% per ASTM D 2488-17.



Notes:

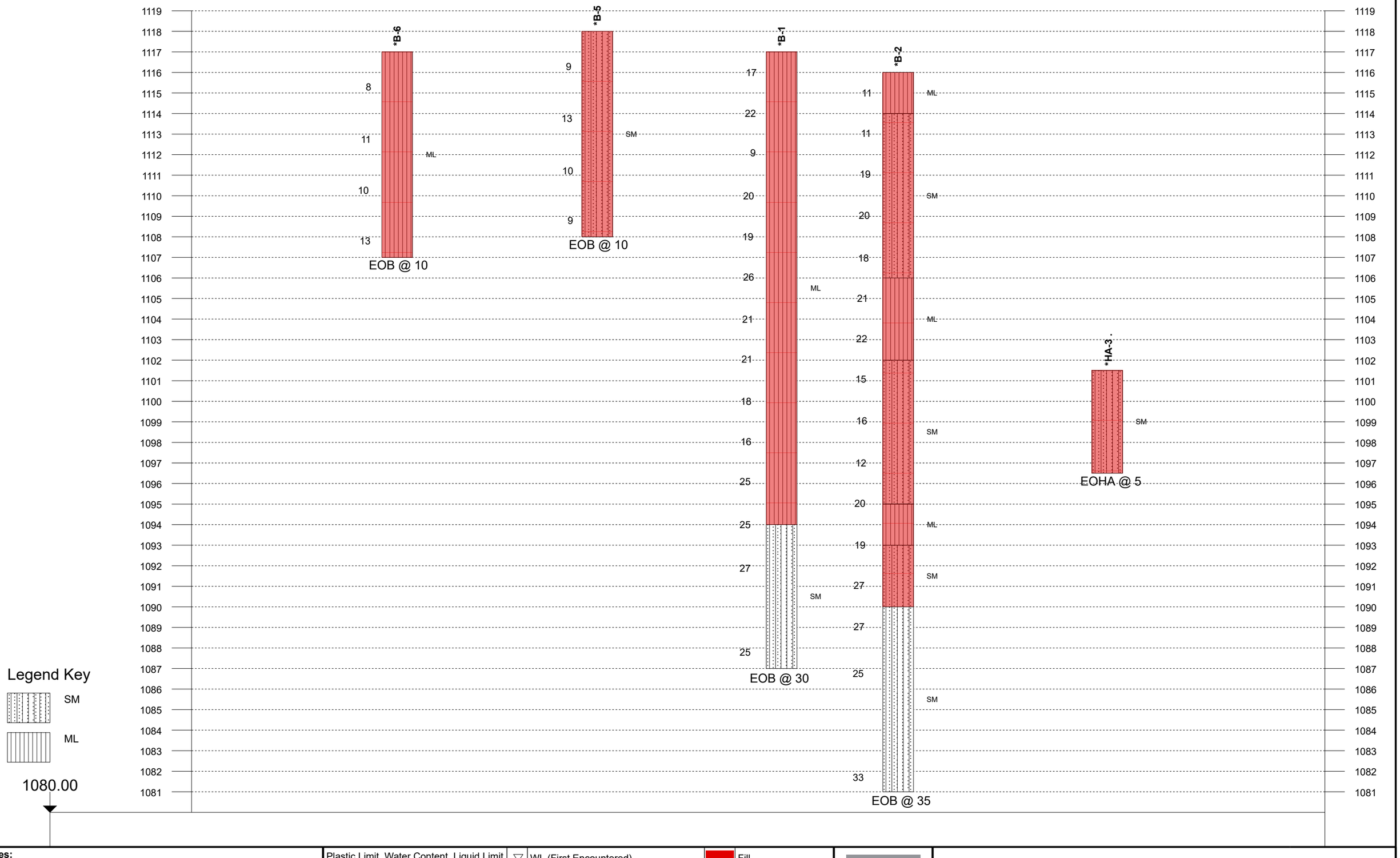
1- EOB: END OF BORING AR: AUGER REFUSAL EOHA: END OF HAND AUGER
2- THE NUMBER BELOW THE STRIPS IS THE DISTANCE ALONG THE BASELINE.
3- SEE INDIVIDUAL BORING LOG AND GEOTECHNICAL INFORMATION.
4- STANDARD PENETRATION TEST RESISTANCE (LEFT OF BORING) IN BLOWS PER FOOT (ASTM D1586).

Plastic Limit Water Content Liquid Limit X——●——△	WL (First Encountered)	Fill	
[FINES CONTENT %]	WL (Completion)	Possible Fill	
BOTTOM OF CASING	WL (Seasonal High Water)	Probable Fill	
LOSS OF CIRCULATION	WL (Stabilized)	Rock	

GENERALIZED SUBSURFACE SOIL PROFILE SECTION LINE A-A'

Buford Oil Change
N3 Property Advisors, LLC
Nelson Brogdon Blvd and Buford Hwy NE, Buford, Georgia, 30519

Project No: 10:11541 Date: 08/25/2022



Notes:

1- EOB: END OF BORING AR: AUGER REFUSAL EOHA: END OF HAND AUGER
2- THE NUMBER BELOW THE STRIPS IS THE DISTANCE ALONG THE BASELINE.
3- SEE INDIVIDUAL BORING LOG AND GEOTECHNICAL INFORMATION.
4- STANDARD PENETRATION TEST RESISTANCE (LEFT OF BORING) IN BLOWS PER FOOT (ASTM D1586).

Plastic Limit Water Content Liquid Limit X——●——△	WL (First Encountered)	Fill	
[FINES CONTENT %]	WL (Completion)	Possible Fill	
BOTTOM OF CASING	WL (Seasonal High Water)	Probable Fill	
100X LOSS OF CIRCULATION	WL (Stabilized)	Rock	

GENERALIZED SUBSURFACE SOIL PROFILE SECTION LINE B-B'

Buford Oil Change
N3 Property Advisors, LLC
Nelson Brogdon Blvd and Buford Hwy NE, Buford, Georgia, 30519

Project No: 10:11541 Date: 08/25/2022

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
N3 Property Advisors, LLC	**10:11541**	**B-1**	**1 of 1**

PROJECT NAME:	DRILLER/CONTRACTOR:
Buford Oil Change	**Sunrise Drilling Inc.**

SITE LOCATION: **Nelson Brogdon Blvd and Buford Hwy NE, Buford, Georgia, 30519**

LOSS OF CIRCULATION

NORTHING:	EASTING:	STATION:	SURFACE ELEVATION: **1117+/-**	BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
	S-1	SS	24	24	(ML FILL) SANDY SILT, contains mica and rock fragments, orangish brown to tannish brown, moist, stiff to very stiff *contains root fragments at 1'-2.5'			8-8-9-9 (17)
	S-2	SS	24	24				8-12-10-12 (22)
5	S-3	SS	24	24			1112	4-5-4-8 (9)
	S-4	SS	24	24				5-8-12-14 (20)
	S-5	SS	24	24				8-9-10-11 (19)
10	S-6	SS	24	24			1107	9-10-16-19 (26)
	S-7	SS	24	24				9-11-10-11 (21)
15	S-8	SS	24	24			1102	9-10-11-12 (21)
	S-9	SS	24	24				7-8-10-12 (18)
	S-10	SS	24	24				7-8-8-9 (16)
20	S-11	SS	24	24			1097	8-12-13-14 (25)
	S-12	SS	24	24				10-12-13-14 (25)
25	S-13	SS	24	24	(SM) SILTY SAND, contains mica, reddish brown to tannish brown, moist, medium dense *contains rock fragments at 28.5' to 30'		1092	10-13-14-15 (27)
	S-14	SS	18	18				9-12-13 (25)
30					**END OF BORING AT 30 FT**		1087	

STANDARD PENETRATION BLOWS/FT (20 40 60 80 100)
ROCK QUALITY DESIGNATION & RECOVERY
RQD
REC

LIQUID LIMIT
PLASTIC LIMIT
CALIBRATED PENETROMETER TSF (1 2 3 4 5)
WATER CONTENT %
[FINES CONTENT] %
(10 20 30 40 50)

21.0 [57.1%]

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

WL (First Encountered)	BORING STARTED: **Aug 12 2022**		CAVE IN DEPTH:
WL (Completion) **Not Encountered**	BORING COMPLETED: **Aug 12 2022**		HAMMER TYPE: **Manual**
WL (Seasonal High Water)	EQUIPMENT: **Track**	LOGGED BY: **EC7**	DRILLING METHOD: **HSA**
WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
N3 Property Advisors, LLC	**10:11541**	**B-2**	**1 of 2**

PROJECT NAME:	DRILLER/CONTRACTOR:
Buford Oil Change	**Sunrise Drilling Inc.**

SITE LOCATION: **Nelson Brogdon Blvd and Buford Hwy NE, Buford, Georgia, 30519**

LOSS OF CIRCULATION

NORTHING:	EASTING:	STATION:	SURFACE ELEVATION: **1116+/-**	BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
	S-1	SS	24	24	(ML FILL) SANDY SILT, contains mica, reddish brown, moist, stiff			4-4-7-7 (11)
	S-2	SS	24	24	(SM FILL) SILTY SAND, contains mica and rock fragments, reddish brown to orangish brown to grayish brown, moist, medium dense			7-5-6-7 (11)
5	S-3	SS	24	24			1111	8-9-10-11 (19)
	S-4	SS	24	24				8-9-11-11 (20)
	S-5	SS	24	24				7-8-10-11 (18)
10	S-6	SS	24	24	(ML FILL) SANDY SILT, contains mica and contains slight roots, brown to orangish brown, moist, very stiff, *contains wood fragments at 12' to 14'		1106	9-10-11-13 (21)
	S-7	SS	24	24				9-11-11-10 (22)
15	S-8	SS	24	24	(SM FILL) SILTY SAND, contains mica, orangish brown to tannish brown to grayish brown, moist, medium dense *contains wood fragments at 18' to 20'		1101	6-6-9-9 (15)
	S-9	SS	24	24				7-8-8-9 (16)
	S-10	SS	24	24				5-5-7-8 (12)
20	S-11	SS	24	24	(ML FILL) SANDY SILT, contains mica, orangish brown to grayish brown, moist, very stiff, *contains wood fragments at 20' to 23'		1096	8-10-10-12 (20)
	S-12	SS	24	24				8-9-10-17 (19)
25	S-13	SS	24	24	(SM FILL) SILTY SAND, contains mica, reddish brown to tannish brown, moist, medium dense, *contains wood and root fragments at 24' to 26'		1091	10-12-15-16 (27)
	S-14	SS	24	24				11-13-14-17 (27)
30	S-15	SS	18	18	(SM) SILTY SAND, contains mica, orangish brown to tannish brown, moist, medium dense to dense		1086	10-13-12 (25)

CONTINUED ON NEXT PAGE

STANDARD PENETRATION BLOWS/FT (20 40 60 80 100)
ROCK QUALITY DESIGNATION & RECOVERY
RQD
REC

LIQUID LIMIT
PLASTIC LIMIT
CALIBRATED PENETROMETER TSF (1 2 3 4 5)
WATER CONTENT %
[FINES CONTENT] %
(10 20 30 40 50)

28
49
20.3
[55.2%]

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

▽ WL (First Encountered)	BORING STARTED: **Aug 12 2022**		CAVE IN DEPTH:
▼ WL (Completion) **Not Encountered**	BORING COMPLETED: **Aug 12 2022**		HAMMER TYPE: **Manual**
▼ WL (Seasonal High Water)	EQUIPMENT: **Track**	LOGGED BY: **EC7**	DRILLING METHOD: **HSA**
▽ WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
N3 Property Advisors, LLC	**10:11541**	**B-2**	**2 of 2**
PROJECT NAME:	DRILLER/CONTRACTOR:		
Buford Oil Change	**Sunrise Drilling Inc.**		
SITE LOCATION: **Nelson Brogdon Blvd and Buford Hwy NE, Buford, Georgia, 30519**		LOSS OF CIRCULATION	
NORTHING:	EASTING:	STATION:	SURFACE ELEVATION: **1116+/-**
			BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"	STANDARD PENETRATION BLOWS/FT (20 40 60 80 100) / ROCK QUALITY DESIGNATION & RECOVERY (RQD, REC)	LIQUID LIMIT / PLASTIC LIMIT / CALIBRATED PENETROMETER TSF (1 2 3 4 5) / WATER CONTENT % [FINES CONTENT] % (10 20 30 40 50)
					(SM) SILTY SAND, contains mica, orangish brown to tannish brown, moist, medium dense to dense					
	S-16	SS	18	18				12-16-17 (33)	33	
35					**END OF BORING AT 35 FT**		1081			
40							1076			
45							1071			
50							1066			
55							1061			
60							1056			

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

▽ WL (First Encountered)	BORING STARTED: **Aug 12 2022**		CAVE IN DEPTH:
▼ WL (Completion) **Not Encountered**	BORING COMPLETED: **Aug 12 2022**		HAMMER TYPE: **Manual**
▼ WL (Seasonal High Water)	EQUIPMENT: **Track**	LOGGED BY: **EC7**	DRILLING METHOD: **HSA**
▽ WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
N3 Property Advisors, LLC	**10:11541**	**B-3**	**1 of 1**

PROJECT NAME:	DRILLER/CONTRACTOR:
Buford Oil Change	**Sunrise Drilling Inc.**

SITE LOCATION: **Nelson Brogdon Blvd and Buford Hwy NE, Buford, Georgia, 30519**

LOSS OF CIRCULATION

NORTHING:	EASTING:	STATION:	SURFACE ELEVATION:	BOTTOM OF CASING
			1116.5+/-	

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"	STANDARD PENETRATION BLOWS/FT (20 40 60 80 100) ROCK QUALITY DESIGNATION & RECOVERY — RQD — REC	LIQUID LIMIT / PLASTIC LIMIT — CALIBRATED PENETROMETER TSF (1 2 3 4 5) — WATER CONTENT % [FINES CONTENT] % (10 20 30 40 50)
	S-1	SS	24	24	(SM FILL) SILTY SAND, contains mica, orangish brown to reddish brown to tannish brown, moist, loose to medium dense *contains rock fragments at 4' to 6'			4-7-7-7 (14)	14	
	S-2	SS	24	24				4-4-4-4 (8)	8	
5	S-3	SS	24	24			1112	5-6-11-12 (17)	17	
	S-4	SS	24	24				7-7-7-9 (14)	14	
	S-5	SS	24	24				7-8-9-11 (17)	17	
10	S-6	SS	24	24			1107	7-9-9-12 (18)	18	
	S-7	SS	24	24				6-7-10-11 (17)	17	
15	S-8	SS	24	24			1102	6-7-9-10 (16)	16	
	S-9	SS	24	24	(ML FILL) SANDY SILT, contains mica and rock fragments, gray to brown, moist, stiff, *contains wood fragments at 16' to 18'			6-5-7-10 (12)	12	
	S-10	SS	24	24				6-7-7-9 (14)	14	
20	S-11	SS	24	24	(SM FILL) SILTY SAND, contains mica, reddish brown to orangish brown, moist, medium dense		1097	6-7-7-8 (14)	14	
	S-12	SS	24	24				6-7-8-9 (15)	15	
25	S-13	SS	24	24	(ML FILL) SANDY SILT, contains rock fragments, reddish brown, moist, stiff to very stiff		1092	7-8-9-10 (17)	17	
	S-14	SS	24	24				7-7-8-10 (15)	15	
	S-15	SS	24	24	(SM) SILTY SAND, contains mica, tannish brown to orangish brown to reddish brown, moist, medium dense		1087	7-8-9-11 (17)	17	
30					**END OF BORING AT 30 FT**					

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

WL (First Encountered)	BORING STARTED: **Aug 12 2022**		CAVE IN DEPTH:
WL (Completion) **Not Encountered**	BORING COMPLETED: **Aug 12 2022**		HAMMER TYPE: **Manual**
WL (Seasonal High Water)	EQUIPMENT: **Track**	LOGGED BY: **EC7**	DRILLING METHOD: **HSA**
WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
N3 Property Advisors, LLC	**10:11541**	**B-4**	**1 of 1**

PROJECT NAME:	DRILLER/CONTRACTOR:
Buford Oil Change	**Sunrise Drilling Inc.**

SITE LOCATION: **Nelson Brogdon Blvd and Buford Hwy NE, Buford, Georgia, 30519**

LOSS OF CIRCULATION

NORTHING:	EASTING:	STATION:	SURFACE ELEVATION:	BOTTOM OF CASING
			1118+/-	

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0					(SM FILL) SILTY SAND, contains mica, orangish brown to reddish brown, moist, loose to medium dense		1118	
	S-1	SS	18	18				4-4-5 (9)
	S-2	SS	18	18				4-5-5 (10)
5							1113	
	S-3	SS	18	18				6-8-9 (17)
	S-4	SS	18	18				6-7-8 (15)
10					**END OF BORING AT 10 FT**		1108	
15							1103	
20							1098	
25							1093	
30							1088	

STANDARD PENETRATION BLOWS/FT
20 40 60 80 100
ROCK QUALITY DESIGNATION & RECOVERY
RQD
REC

LIQUID LIMIT
PLASTIC LIMIT
CALIBRATED PENETROMETER TSF
1 2 3 4 5
WATER CONTENT %
[FINES CONTENT] %
10 20 30 40 50

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

WL (First Encountered)	BORING STARTED: **Aug 12 2022**		CAVE IN DEPTH:
WL (Completion) **Not Encountered**	BORING COMPLETED: **Aug 12 2022**		HAMMER TYPE: **Manual**
WL (Seasonal High Water)	EQUIPMENT: **Track**	LOGGED BY: **EC7**	DRILLING METHOD: **HSA**
WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
N3 Property Advisors, LLC	**10:11541**	**B-5**	**1 of 1**

PROJECT NAME:	DRILLER/CONTRACTOR:
Buford Oil Change	**Sunrise Drilling Inc.**

SITE LOCATION: **Nelson Brogdon Blvd and Buford Hwy NE, Buford, Georgia, 30519**

LOSS OF CIRCULATION

NORTHING:	EASTING:	STATION:	SURFACE ELEVATION: **1118**	BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0					(SM FILL) SILTY SAND, contains mica and rock fragments, orangish brown to reddish brown, moist, loose to medium dense			
	S-1	SS	18	18				3-4-5 (9)
	S-2	SS	18	18	*contains wood fragments at 6' to 7.5'			5-6-7 (13)
5							1113	
	S-3	SS	18	18				5-5-5 (10)
	S-4	SS	18	18				4-4-5 (9)
10					**END OF BORING AT 10 FT**		1108	
15							1103	
20							1098	
25							1093	
30							1088	

STANDARD PENETRATION BLOWS/FT
20 40 60 80 100
ROCK QUALITY DESIGNATION & RECOVERY
RQD
REC

LIQUID LIMIT
PLASTIC LIMIT
CALIBRATED PENETROMETER TSF
1 2 3 4 5
WATER CONTENT %
[FINES CONTENT] %
10 20 30 40 50

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

WL (First Encountered)	BORING STARTED: **Aug 12 2022**		CAVE IN DEPTH:
WL (Completion) **Not Encountered**	BORING COMPLETED: **Aug 12 2022**		HAMMER TYPE: **Manual**
WL (Seasonal High Water)	EQUIPMENT: **Track**	LOGGED BY: **EC7**	DRILLING METHOD: **HSA**
WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
N3 Property Advisors, LLC	**10:11541**	**B-6**	**1 of 1**

PROJECT NAME:	DRILLER/CONTRACTOR:
Buford Oil Change	**Sunrise Drilling Inc.**

SITE LOCATION: **Nelson Brogdon Blvd and Buford Hwy NE, Buford, Georgia, 30519**

LOSS OF CIRCULATION

NORTHING:	EASTING:	STATION:	SURFACE ELEVATION: **1117+/-**	BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0	S-1	SS	18	18	(ML FILL) SANDY SILT, contains mica, orangish brown, moist, firm to stiff		1117	3-4-4 (8)
	S-2	SS	18	18				3-5-6 (11)
5	S-3	SS	18	18			1112	4-5-5 (10)
	S-4	SS	18	18				6-6-7 (13)
10					**END OF BORING AT 10 FT**		1107	
15							1102	
20							1097	
25							1092	
30							1087	

STANDARD PENETRATION BLOWS/FT
20 40 60 80 100
ROCK QUALITY DESIGNATION & RECOVERY
RQD
REC

LIQUID LIMIT
PLASTIC LIMIT
CALIBRATED PENETROMETER TSF
1 2 3 4 5
WATER CONTENT %
[FINES CONTENT] %
10 20 30 40 50

21.0 [52.4%]

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

WL (First Encountered)	BORING STARTED: **Aug 12 2022**		CAVE IN DEPTH:
WL (Completion) **Not Encountered**	BORING COMPLETED: **Aug 12 2022**		HAMMER TYPE: **Manual**
WL (Seasonal High Water)	EQUIPMENT: **Track**	LOGGED BY: **EC7**	DRILLING METHOD: **HSA**
WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	SHEET:
N3 Property Advisors, LLC	**10:11541**	**1 of 1**
PROJECT NAME:	HAND AUGER NO.:	SURFACE ELEVATION: **1108+/-**
Buford Oil Change	**HA-1**	
SITE LOCATION:		STATION:
Nelson Brogdon Blvd and Buford Hwy NE, Buford, Georgia, 30519		
NORTHING:	EASTING:	

DEPTH (FT)	WATER LEVELS	ELEVATION (FT)	DESCRIPTION OF MATERIAL	EXCAVATION EFFORT	DCP	SAMPLE NUMBER	FINES CONTENT (%)	MOISTURE CONTENT (%)
			(SM FILL) SILTY SAND, contains mica, orangish brown, moist			S-1		
						S-2		
5		1103				S-3		
			END OF HAND AUGER AT 6 FT					
10		1098						
15								

REMARKS:

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDRY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

EXCAVATION EFFORT: E - EASY M - MEDIUM D - DIFFICULT VD - VERY DIFFICULT

▽ WL (First Encountered)	▼ WL (Seasonal High)	ECS REP:	DATE COMPLETED:	UNITS:	CAVE-IN-DEPTH:
▼ WL (Completion) NE		**MG, KM**	**Aug 10, 2022**	**English**	

HAND AUGER LOG

CLIENT:	PROJECT NO.:	SHEET:
N3 Property Advisors, LLC	**10:11541**	**1 of 1**
PROJECT NAME:	HAND AUGER NO.:	SURFACE
Buford Oil Change	**HA-2**	ELEVATION: **1106+/-**
SITE LOCATION:		STATION:
Nelson Brogdon Blvd and Buford Hwy NE, Buford, Georgia, 30519		
NORTHING:	EASTING:	

DEPTH (FT)	WATER LEVELS	ELEVATION (FT)	DESCRIPTION OF MATERIAL	EXCAVATION EFFORT	DCP	SAMPLE NUMBER	FINES CONTENT (%)	MOISTURE CONTENT (%)
			(ML FILL) SANDY SILT, contains mica, orangish brown, moist			S-1		
						S-2	54	15.4
5		1101				S-3		
			END OF HAND AUGER AT 6 FT					
10		1096						
15								

REMARKS:

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDRY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

EXCAVATION EFFORT: E - EASY M - MEDIUM D - DIFFICULT VD - VERY DIFFICULT

▽ WL (First Encountered)	▼ WL (Seasonal High)	ECS REP:	DATE COMPLETED:	UNITS:	CAVE-IN-DEPTH:
▼ WL (Completion) NE		**MG, KM**	**Aug 10, 2022**	**English**	

HAND AUGER LOG

CLIENT:	PROJECT NO.:	SHEET:
N3 Property Advisors, LLC	**10:11541**	**1 of 1**
PROJECT NAME:	HAND AUGER NO.:	SURFACE ELEVATION:
Buford Oil Change	**HA-3**	**1101.5+/-**
SITE LOCATION:		STATION:
Nelson Brogdon Blvd and Buford Hwy NE, Buford, Georgia, 30519		
NORTHING:	EASTING:	

DEPTH (FT)	WATER LEVELS	ELEVATION (FT)	DESCRIPTION OF MATERIAL	EXCAVATION EFFORT	DCP	SAMPLE NUMBER	FINES CONTENT (%)	MOISTURE CONTENT (%)
			(SM FILL) SILTY SAND, contains mica, orangish brown, moist			S-1		
						S-2		
		1097				S-3		
5			**END OF HAND AUGER AT 5 FT**					
		1092						
10								
		1087						
15								

REMARKS:

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDRY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

EXCAVATION EFFORT: E - EASY M - MEDIUM D - DIFFICULT VD - VERY DIFFICULT

▽ WL (First Encountered)	▼ WL (Seasonal High)	ECS REP:	DATE COMPLETED:	UNITS:	CAVE-IN-DEPTH:
▼ WL (Completion) NE		**MG, KM**	**Aug 10, 2022**	**English**	

HAND AUGER LOG

WILDCAT DYNAMIC CONE LOG

ECS Southeast, LLP
1281 Kennestone Circle, Suite 200
Marietta, GA 30066

PROJECT NUMBER: 10:11541
DATE STARTED: 08-10-2022
DATE COMPLETED: 08-10-2022

HOLE #: HA-1
CREW: MG/KM
PROJECT: Buford Oil Change
ADDRESS: Nelson Brogdon Blvd
LOCATION: Buford, Ga

SURFACE ELEVATION: 1108+/-
WATER ON COMPLETION: Not Encountered
HAMMER WEIGHT: 35 lbs.
CONE AREA: 10 sq. cm

DEPTH	BLOWS PER 10 cm	RESISTANCE Kg/cm²	GRAPH OF CONE RESISTANCE 0 50 100 150	N'	TESTED CONSISTENCY NON-COHESIVE	COHESIVE
-	5	22.2	••••••	6	LOOSE	MEDIUM STIFF
-	4	17.8	•••••	5	LOOSE	MEDIUM STIFF
- 1 ft	6	26.6	•••••••	7	LOOSE	MEDIUM STIFF
-	7	31.1	•••••••••	8	LOOSE	MEDIUM STIFF
-	7	31.1	•••••••••	8	LOOSE	MEDIUM STIFF
- 2 ft	6	26.6	•••••••	7	LOOSE	MEDIUM STIFF
-	6	26.6	•••••••	7	LOOSE	MEDIUM STIFF
-	7	31.1	•••••••••	8	LOOSE	MEDIUM STIFF
- 3 ft	7	31.1	•••••••••	8	LOOSE	MEDIUM STIFF
- 1 m	12	53.3	••••••••••••••	15	MEDIUM DENSE	STIFF
-	15	57.9	••••••••••••••••	16	MEDIUM DENSE	VERY STIFF
- 4 ft	14	54.0	••••••••••••••	15	MEDIUM DENSE	STIFF
-	20	77.2	••••••••••••••••••••	22	MEDIUM DENSE	VERY STIFF
-	50	193.0	••	25+	VERY DENSE	HARD
- 5 ft			'Equipment Refusal @ 4' 8"			
-						
-						
- 6 ft						
-						
- 2 m						
- 7 ft						
-						
-						
- 8 ft						
-						
-						
- 9 ft						
-						
-						
- 3 m 10 ft						
-						
-						
-						
- 11 ft						
-						
-						
- 12 ft						
-						
-						
- 4 m 13 ft						

WILDCAT DYNAMIC CONE LOG

ECS Southeast, LLP
1281 Kennestone Circle, Suite 200
Marietta, GA 30066

PROJECT NUMBER: 10:11541
DATE STARTED: 08-10-2022
DATE COMPLETED: 08-10-2022

HOLE #: HA-2
CREW: MG/KM
PROJECT: Buford Oil Change
ADDRESS: Nelson Brogdon Blvd
LOCATION: Buford, Ga

SURFACE ELEVATION: 1106+/-
WATER ON COMPLETION: Not Encountered
HAMMER WEIGHT: 35 lbs.
CONE AREA: 10 sq. cm

DEPTH	BLOWS PER 10 cm	RESISTANCE Kg/cm²	GRAPH OF CONE RESISTANCE 0 50 100 150	N'	TESTED CONSISTENCY NON-COHESIVE	COHESIVE
-	5	22.2	••••••	6	LOOSE	MEDIUM STIFF
-	5	22.2	••••••	6	LOOSE	MEDIUM STIFF
- 1 ft	5	22.2	••••••	6	LOOSE	MEDIUM STIFF
-	6	26.6	•••••••	7	LOOSE	MEDIUM STIFF
-	8	35.5	•••••••••	10	LOOSE	STIFF
- 2 ft	13	57.7	••••••••••••••••	16	MEDIUM DENSE	VERY STIFF
-	12	53.3	••••••••••••••	15	MEDIUM DENSE	STIFF
-	13	57.7	••••••••••••••••	16	MEDIUM DENSE	VERY STIFF
- 3 ft	13	57.7	••••••••••••••••	16	MEDIUM DENSE	VERY STIFF
- 1 m	15	66.6	••••••••••••••••••	19	MEDIUM DENSE	VERY STIFF
-	13	50.2	•••••••••••••	14	MEDIUM DENSE	STIFF
- 4 ft	15	57.9	••••••••••••••••	16	MEDIUM DENSE	VERY STIFF
-	16	61.8	•••••••••••••••••	17	MEDIUM DENSE	VERY STIFF
-	19	73.3	••••••••••••••••••••	20	MEDIUM DENSE	VERY STIFF
- 5 ft	21	81.1	•••••••••••••••••••••	23	MEDIUM DENSE	VERY STIFF
-	19	73.3	••••••••••••••••••••	20	MEDIUM DENSE	VERY STIFF
-	17	65.6	•••••••••••••••••••	18	MEDIUM DENSE	VERY STIFF
- 6 ft	16	61.8	•••••••••••••••••	17	MEDIUM DENSE	VERY STIFF
-	20	77.2	••••••••••••••••••••	22	MEDIUM DENSE	VERY STIFF
- 2 m	20	77.2	••••••••••••••••••••	22	MEDIUM DENSE	VERY STIFF
- 7 ft	21	71.8	••••••••••••••••••••	20	MEDIUM DENSE	VERY STIFF
-	32	109.4	•••••••••••••••••••••••••••••	25+	DENSE	HARD
-	31	106.0	•••••••••••••••••••••••••••••	25+	MEDIUM DENSE	VERY STIFF
- 8 ft	50	171.0	•••	25+	DENSE	HARD
-			"Equipment Refusal @ 8' 1"			
-						
- 9 ft						
-						
-						
- 3 m 10 ft						
-						
-						
-						
- 11 ft						
-						
-						
- 12 ft						
-						
-						
- 4 m 13 ft						

WILDCAT DYNAMIC CONE LOG

ECS Southeast, LLP
1281 Kennestone Circle, Suite 200
Marietta, GA 30066

PROJECT NUMBER: 10:11541
DATE STARTED: 08-10-2022
DATE COMPLETED: 08-10-2022

HOLE #: HA-3
CREW: MG/KM
PROJECT: Buford Oil Change
ADDRESS: Nelson Brogdon Blvd
LOCATION: Buford, Ga

SURFACE ELEVATION: 1101.5+/-
WATER ON COMPLETION: Not Encountered
HAMMER WEIGHT: 35 lbs.
CONE AREA: 10 sq. cm

DEPTH	BLOWS PER 10 cm	RESISTANCE Kg/cm²	GRAPH OF CONE RESISTANCE 0 50 100 150	N'	TESTED CONSISTENCY NON-COHESIVE	TESTED CONSISTENCY COHESIVE
-	5	22.2	••••••	6	LOOSE	MEDIUM STIFF
-	12	53.3	••••••••••••••	15	MEDIUM DENSE	STIFF
- 1 ft	16	71.0	••••••••••••••••••••	20	MEDIUM DENSE	VERY STIFF
-	18	79.9	•••••••••••••••••••••••	22	MEDIUM DENSE	VERY STIFF
-	15	66.6	•••••••••••••••••••	19	MEDIUM DENSE	VERY STIFF
- 2 ft	11	48.8	••••••••••••••	13	MEDIUM DENSE	STIFF
-	20	88.8	•••••••••••••••••••••••••	25	MEDIUM DENSE	VERY STIFF
-	19	84.4	•••••••••••••••••••••••	24	MEDIUM DENSE	VERY STIFF
- 3 ft	16	71.0	••••••••••••••••••••	20	MEDIUM DENSE	VERY STIFF
- 1 m	20	88.8	•••••••••••••••••••••••	25	MEDIUM DENSE	VERY STIFF
-	31	119.7	••••••••••••••••••••••••••••••••••	25+	DENSE	HARD
- 4 ft	23	88.8	•••••••••••••••••••••••	25	MEDIUM DENSE	VERY STIFF
-	20	77.2	••••••••••••••••••••	22	MEDIUM DENSE	VERY STIFF
-	18	69.5	••••••••••••••••••	19	MEDIUM DENSE	VERY STIFF
- 5 ft	20	77.2	••••••••••••••••••••	22	MEDIUM DENSE	VERY STIFF
-	30	115.8	•••••••••••••••••••••••••••••	25+	DENSE	HARD
-	31	119.7	••••••••••••••••••••••••••••••••••	25+	DENSE	HARD
- 6 ft	24	92.6	•••••••••••••••••••••••	25+	MEDIUM DENSE	VERY STIFF
-	37	142.8	••••••••••••••••••••••••••••••••••••	25+	DENSE	HARD
- 2 m	50	193.0	••	25+	VERY DENSE	HARD
- 7 ft			"Equipment Refusal @ 6' 9"			
-						
-						
- 8 ft						
-						
-						
- 9 ft						
-						
-						
- 3 m 10 ft						
-						
-						
-						
- 11 ft						
-						
-						
- 12 ft						
-						
-						
- 4 m 13 ft						

APPENDIX C – Laboratory Testing

Laboratory Test Results Summary

Laboratory Testing Summary

Sample Location	Sample Number	Depth (feet)	^MC (%)	Soil Type	Atterberg Limits			**Percent Passing No. 200 Sieve	Moisture - Density		CBR (%)		#Organic Content (%)
					LL	PL	PI		<Maximum Density (pcf)	<Optimum Moisture (%)	0.1 in.	0.2 in.	
B-1	S-2	2-4	21.0	ML	43	30	13	57.1					
B-2	S-1	0-2	20.3	ML	49	28	21	55.2					
B-6	S-1	1-2.5	21.0	ML				52.4					
HA-2	S-2	3-3.5	15.4	ML				53.5					

Notes: See test reports for test method, ^ASTM D2216-19, *ASTM D2488, **ASTM D1140-17, #ASTM D2974-20e1 < See test report for D4718 corrected values

Definitions: MC: Moisture Content, Soil Type: USCS (Unified Soil Classification System), LL: Liquid Limit, PL: Plastic Limit, PI: Plasticity Index, CBR: California Bearing Ratio, OC: Organic Content

Project: Buford Oil Change
Client: N3 Property Advisors, LLC

Project No.: 10:11541
Date Reported: 8/25/2022

Office	Address	Office Number
ECS Southeast LLP - Marietta	1281 Kennestone Circle NE Suite 200 Marietta, GA 30066	(770) 590-1971

Tested by	Checked by	Approved by	Date Received
KShah	KShah	KShah	8/18/2022

APPENDIX D – Supplemental Report Document

GBA Important information About This Geotechnical-Engineering Report

Important Information about This

Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

The Geoprofessional Business Association (GBA) has prepared this advisory to help you – assumedly a client representative – interpret and apply this geotechnical-engineering report as effectively as possible. In that way, clients can benefit from a lowered exposure to the subsurface problems that, for decades, have been a principal cause of construction delays, cost overruns, claims, and disputes. If you have questions or want more information about any of the issues discussed below, contact your GBA-member geotechnical engineer. Active involvement in the Geoprofessional Business Association exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project.

Geotechnical-Engineering Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical-engineering study conducted for a given civil engineer will not likely meet the needs of a civil-works constructor or even a different civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client. *Those who rely on a geotechnical-engineering report prepared for a different client can be seriously misled*. No one except authorized client representatives should rely on this geotechnical-engineering report without first conferring with the geotechnical engineer who prepared it. *And no one – not even you – should apply this report for any purpose or project except the one originally contemplated.*

Read this Report in Full

Costly problems have occurred because those relying on a geotechnical-engineering report did not read it *in its entirety*. Do not rely on an executive summary. Do not read selected elements only. *Read this report in full.*

You Need to Inform Your Geotechnical Engineer about Change

Your geotechnical engineer considered unique, project-specific factors when designing the study behind this report and developing the confirmation-dependent recommendations the report conveys. A few typical factors include:

- the client's goals, objectives, budget, schedule, and risk-management preferences;
- the general nature of the structure involved, its size, configuration, and performance criteria;
- the structure's location and orientation on the site; and
- other planned or existing site improvements, such as retaining walls, access roads, parking lots, and underground utilities.

Typical changes that could erode the reliability of this report include those that affect:

- the site's size or shape;
- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light-industrial plant to a refrigerated warehouse;
- the elevation, configuration, location, orientation, or weight of the proposed structure;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes – even minor ones – and request an assessment of their impact. *The geotechnical engineer who prepared this report cannot accept responsibility or liability for problems that arise because the geotechnical engineer was not informed about developments the engineer otherwise would have considered.*

This Report May Not Be Reliable

Do not rely on this report if your geotechnical engineer prepared it:

- for a different client;
- for a different project;
- for a different site (that may or may not include all or a portion of the original site); or
- before important events occurred at the site or adjacent to it; e.g., man-made events like construction or environmental remediation, or natural events like floods, droughts, earthquakes, or groundwater fluctuations.

Note, too, that it could be unwise to rely on a geotechnical-engineering report whose reliability may have been affected by the passage of time, because of factors like changed subsurface conditions; new or modified codes, standards, or regulations; or new techniques or tools. *If your geotechnical engineer has not indicated an "apply-by" date on the report, ask what it should be*, and, in general, *if you are the least bit uncertain* about the continued reliability of this report, contact your geotechnical engineer before applying it. A minor amount of additional testing or analysis – if any is required at all – could prevent major problems.

Most of the "Findings" Related in This Report Are Professional Opinions

Before construction begins, geotechnical engineers explore a site's subsurface through various sampling and testing procedures. *Geotechnical engineers can observe actual subsurface conditions only at those specific locations where sampling and testing were performed*. The data derived from that sampling and testing were reviewed by your geotechnical engineer, who then applied professional judgment to form opinions about subsurface conditions throughout the site. Actual sitewide-subsurface conditions may differ – maybe significantly – from those indicated in this report. Confront that risk by retaining your geotechnical engineer to serve on the design team from project start to project finish, so the individual can provide informed guidance quickly, whenever needed.

This Report's Recommendations Are Confirmation-Dependent

The recommendations included in this report – including any options or alternatives – are confirmation-dependent. In other words, *they are not final*, because the geotechnical engineer who developed them relied heavily on judgment and opinion to do so. Your geotechnical engineer can finalize the recommendations *only after observing actual subsurface conditions* revealed during construction. If through observation your geotechnical engineer confirms that the conditions assumed to exist actually do exist, the recommendations can be relied upon, assuming no other changes have occurred. *The geotechnical engineer who prepared this report cannot assume responsibility or liability for confirmation-dependent recommendations if you fail to retain that engineer to perform construction observation.*

This Report Could Be Misinterpreted

Other design professionals' misinterpretation of geotechnical-engineering reports has resulted in costly problems. Confront that risk by having your geotechnical engineer serve as a full-time member of the design team, to:

- confer with other design-team members,
- help develop specifications,
- review pertinent elements of other design professionals' plans and specifications, and
- be on hand quickly whenever geotechnical-engineering guidance is needed.

You should also confront the risk of constructors misinterpreting this report. Do so by retaining your geotechnical engineer to participate in prebid and preconstruction conferences and to perform construction observation.

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can shift unanticipated-subsurface-conditions liability to constructors by limiting the information they provide for bid preparation. To help prevent the costly, contentious problems this practice has caused, include the complete geotechnical-engineering report, along with any attachments or appendices, with your contract documents, *but be certain to note conspicuously that you've included the material for informational purposes only*. To avoid misunderstanding, you may also want to note that "informational purposes" means constructors have no right to rely on the interpretations, opinions, conclusions, or recommendations in the report, but they may rely on the factual data relative to the specific times, locations, and depths/elevations referenced. Be certain that constructors know they may learn about specific project requirements, including options selected from the report, *only* from the design drawings and specifications. Remind constructors that they may perform their own studies if they want to, and *be sure to allow enough time* to permit them to do so. Only then might you be in a position to give constructors the information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions. Conducting prebid and preconstruction conferences can also be valuable in this respect.

Read Responsibility Provisions Closely

Some client representatives, design professionals, and constructors do not realize that geotechnical engineering is far less exact than other engineering disciplines. That lack of understanding has nurtured unrealistic expectations that have resulted in disappointments, delays, cost overruns, claims, and disputes. To confront that risk, geotechnical engineers commonly include explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely*. Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The personnel, equipment, and techniques used to perform an environmental study – e.g., a "phase-one" or "phase-two" environmental site assessment – differ significantly from those used to perform a geotechnical-engineering study. For that reason, a geotechnical-engineering report does not usually relate any environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated subsurface environmental problems have led to project failures*. If you have not yet obtained your own environmental information, ask your geotechnical consultant for risk-management guidance. As a general rule, *do not rely on an environmental report prepared for a different client, site, or project, or that is more than six months old.*

Obtain Professional Assistance to Deal with Moisture Infiltration and Mold

While your geotechnical engineer may have addressed groundwater, water infiltration, or similar issues in this report, none of the engineer's services were designed, conducted, or intended to prevent uncontrolled migration of moisture – including water vapor – from the soil through building slabs and walls and into the building interior, where it can cause mold growth and material-performance deficiencies. Accordingly, ***proper implementation of the geotechnical engineer's recommendations will not of itself be sufficient to prevent moisture infiltration.*** Confront the risk of moisture infiltration by including building-envelope or mold specialists on the design team. ***Geotechnical engineers are not building-envelope or mold specialists.***

GEOPROFESSIONAL BUSINESS ASSOCIATION

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